

CLAIMS

1. An electrical transformer for converting a first voltage to a second voltage, comprising:

a core comprising a first core portion and a second core portion; and

a first shielding device constructed and arranged to electrically shield said first core portion from said second core portion.

2. An electrical transformer in accordance with claim 1 and further comprising,

a first winding around said first core portion,

and a second winding around said second core portion;

said shielding device constructed and arranged to shield said first winding from said second winding.

3. An electrical transformer in accordance with claim 1 wherein said shielding device comprises,

an electrically insulating substrate,

and a pattern of electrically conductive material disposed on said substrate.

4. An electrical transformer in accordance with claim 3 wherein said pattern comprises,

a plurality of parallel traces of said electrically conductive material,

a connecting trace of said conductive material interconnecting said plurality of parallel traces, and

an electrical drain wire electrically connected to said connecting trace.

5. An electrical transformer in accordance with claim 3 wherein said shielding device is

disposed so that said electrically conductive pattern faces said first winding.

1 6. An electrical transformer in accordance with claim 1 wherein said shielding device
2 comprises,

3 a sheet of material with a surface resistivity in a range of between 10 and 100 ohms
4 per square.

1 7. An electrical transformer in accordance with claim 6 wherein said material comprises
2 a carbon impregnated polymer.

1 8. An electrical transformer in accordance with claim 1 wherein said shielding device
2 comprises,

3 an electrically insulating substrate,

4 a conductive coating disposed on said electrically insulating substrate,

5 said conductive coating having a surface resistivity in a range of between 10 and 100
6 ohms per square.

1 9. An electrical transformer in accordance with claim 8 wherein said conductive coating
2 comprises indium tin oxide.

1 10. An electrical transformer in accordance with claim 1 wherein said first shielding
2 device comprises first and second surfaces,

3 said first shielding device having conductive material disposed on said first surface,

4 and wherein said first shielding device is positioned so that said first surface faces
5 said first core portion.

1 11. An electrical transformer in accordance with claim 10 wherein said conductive
2 material is in contact with said first core portion.

1 12. An electrical transformer in accordance with claim 1 and further comprising,
2 a second shielding device,
3 said second shielding device comprising first and second surfaces,
4 said second shielding device having conductive material disposed on said second
5 surface,
6 and wherein said shielding device is positioned so that said second surface faces said
7 second core portion.

1 13. An electrical transformer in accordance with claim 1 wherein said core further
2 comprises,
3 a third core portion,
4 said transformer further comprising a second shielding device constructed and
5 arranged to electrically shield said first core portion from said third core portion.

1 14. A power supply for an electronic device comprising,
2 input terminals for inputting line electrical power characterized by voltage,
3 a rectifier constructed and arranged to rectify said line electrical power to produce
4 rectified electrical power,
5 a switching circuit constructed and arranged to switch said rectified electrical power
6 to produce switched rectified electrical power,
7 a transformer having a core comprising a first core portion and a second core portion,
8 and
9 a first shielding device constructed and arranged to electrically shield said first core
10 portion from said second core portion.

1 15. A power supply in accordance with claim 14 and further comprising,
2 a first winding on said first core portion,
3 a second winding on said second core portion,
4 wherein said shielding device is constructed and arranged to shield said first winding
5 from said second winding.

1 16. A power supply in accordance with claim 14 wherein said shielding device
2 comprises,
3 an electrically insulating substrate,
4 and a pattern of electrically conductive material disposed on said substrate.

1 17. A power supply in accordance with claim 16 wherein said pattern comprises,
2 a plurality of parallel traces of said electrically conductive material,
3 a connecting trace of said electrically conductive material interconnecting said
4 plurality of parallel traces, and
5 an electrical drain wire electrically connected to said connecting trace.

1 18. A power supply in accordance with claim 16 wherein said shielding device is
2 disposed with said electrically conductive pattern facing said first winding.

1 19. A power supply in accordance with claim 14 wherein said shielding device
2 comprises,
3 a sheet of material with a surface resistivity in a range between 10 and 100 ohms per
4 square.

1 20. A power supply in accordance with claim 19 wherein said material comprises a
2 carbon impregnated polymer.

1 21. A power supply in accordance with claim 14 wherein said shielding device
2 comprises,

3 an electrically insulating substrate,

4 and a conductive coating having a surface resistivity in a range of between 10 and
5 100 ohms per square.

1 22. A power supply in accordance with claim 21 wherein said conductive coating
2 comprises indium tin oxide.

1 23. A power supply in accordance with claim 14 wherein said first shielding device
2 comprises first and second surfaces,

3 conductive material disposed on said first surface,

4 and wherein said shielding device is positioned so that said first surface faces said
5 first core portion.

1 24. A power supply in accordance with claim 23 wherein said conductive material is in
2 electrical contact with said first core portion.

1 25. A power supply in accordance with claim 23 and further comprising,

2 a second shielding device having first and second surfaces with conductive material
3 disposed on said second surface,

4 and wherein said second shielding device is positioned so that said second shielding
5 device second surface faces said second core portion.

1 26. An electronic device comprising,
 2 an antenna,
 3 a tuner coupled to said antenna,
 4 a switching power supply constructed and arranged to provide electrical power to said
 5 tuner,
 6 said switching power supply comprising a transformer having a first core portion, a
 7 second core portion, a first winding on said first core portion, and a second winding on said
 8 second core portion,
 9 and a first shielding device constructed and arranged to electrically shield said first
 10 core portion from said second core portion.

1 27. An electronic device in accordance with claim 26
 2 wherein said shielding device is constructed and arranged to shield said first winding
 3 from said second winding.

1 28. An electronic device in accordance with claim 26 wherein said shielding device
 2 comprises,

3 an electrically insulating substrate,
 4 and a pattern of electrically conductive material disposed on said substrate.

1 29. An electronic device in accordance with claim 28 wherein said pattern comprises,
 2 a plurality of parallel traces of said electrically conductive material,
 3 a connecting trace of said conducting material interconnecting said plurality of
 4 parallel traces, and
 5 an electrical drain wire electrically connected to said connecting trace.

1 30. An electronic device in accordance with claim 28 wherein said shielding device is
2 disposed with said electrically conductive material facing said primary winding.

1 31. An electronic device in accordance with claim 26 wherein said shielding device
2 comprises,

3 a sheet of material with a surface resistivity in a range between 10 and 100 ohms per
4 square.

1 32. An electronic device in accordance with claim 31 wherein said material comprises a
2 carbon impregnated polymer.

1 33. An electronic device in accordance with claim 26 wherein said shielding device
2 comprises,

3 an electrically insulating substrate,

4 a conductive coating on said substrate having a surface resistivity in a range of
5 between 10 and 100 ohms per square.

1 34. An electrical transformer in accordance with claim 33 wherein said conductive
2 coating comprises indium tin oxide.

1 35. An electronic device in accordance with claim 26 wherein said first shielding device
2 comprises first and second surfaces with conductive material on said first surface,

3 and wherein said shielding device is positioned with said first surface facing said first
4 winding.

1 36. An electronic device in accordance with claim 35 wherein said conductive material is
2 in electrical contact with said first core portion.

1 37. An electrical device in accordance with claim 35 and further comprising,
2 a second shielding device having first and second surfaces with conductive material
3 disposed on said second surface,
4 and wherein said shielding device is positioned with said second shielding device
5 second surface facing said second core portion.

1 38. A shielding device for an electrical transformer having a first core portion and a
2 second core portion,
3 first and second windings on said first and second core portions respectively,
4 said shielding device being constructed and arranged to electrically shield said first
5 core portion from said second core portion.

1 39. A shielding device in accordance with claim 38 and further comprising,
2 an electrically insulating substrate,
3 and a pattern of electrically conductive material disposed on said substrate.

1 40. A shielding device in accordance with claim 39 wherein said pattern comprises,
2 a plurality of parallel traces of said electrically conductive material,
3 a connecting trace of said conductive material interconnecting said plurality of
4 parallel traces, and
5 an electrical drain wire electrically connected to said connecting trace.

1 41. A shielding device in accordance with claim 39, wherein said shielding device is
2 disposed with said electrically conductive pattern facing said first winding.

1 42. A shielding device in accordance with claim 38 wherein said shielding device
2 comprises,

3 a sheet of material with a resistivity in the range of between 10 and 100 ohms per
4 square.

1 43. A shielding device in accordance with claim 42 wherein said material comprises a
2 carbon impregnated polymer.

1 44. A shielding device in accordance with claim 38 wherein said shielding device
2 comprises,

3 an electrically insulating substrate,

4 a conductive coating on said substrate having a surface resistivity in a range of
5 between 10 and 100 ohms per square disposed on said electrically insulating substrate.

1 45. A shielding device in accordance with claim 44 wherein said conductive coating
2 comprises indium tin oxide.

1 46. A shielding device in accordance with claim 38 wherein said first shielding device
2 comprises first and second surfaces with conductive material disposed on said first surface,

3 and wherein said shielding device is positioned so that said first surface faces said
4 first winding.

1 47. A shielding device in accordance with claim 46 wherein said conductive material is in
2 electrical contact with said first core portion.

1 48. A shielding device in accordance with claim 46 and further comprising a second
2 shielding device having first and second surfaces with conductive material disposed on said
3 second surface,

4 and wherein said second shielding device is positioned so that said second shielding
5 device second surface faces said second core portion.

1 49. Electrical apparatus comprising,

2 a source of electrical energy,

3 switching circuitry coupled to said source of electrical energy,

4 a transformer coupled to said switching circuitry,

5 said transformer having a core with first and second core portions,

6 and a shielding device between said first and second core portions constructed and
7 arranged to electrically shield said first core portion from said second core portion.

1 50. Electrical apparatus in accordance with claim 49 wherein said first and second core
2 portions carry first and second windings respectively,

3 and said shielding device is constructed and arranged to shield said first winding from
4 said second winding.

1 51. Electrical apparatus in accordance with claim 50 wherein said shielding device
2 comprises,

3 an electrical substrate,

4 and a pattern of electrically conductive material disposed on said substrate.

1 52. Electrical apparatus in accordance with claim 51 wherein said pattern comprises,

2 a plurality of parallel traces of said electrically conductive material,

3 a connecting trace of said conductive material interconnecting said parallel traces,
4 and an electrical drain wire connected to said conducting trace.

1 53. Electrical apparatus in accordance with claim 49 wherein said shielding device
2 comprises,

3 a sheet of material with a surface resistivity of between 10 to 100 ohms per square.

1 54. Electrical apparatus in accordance with claim 53 wherein said material comprises a
2 carbon impregnated polymer.

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